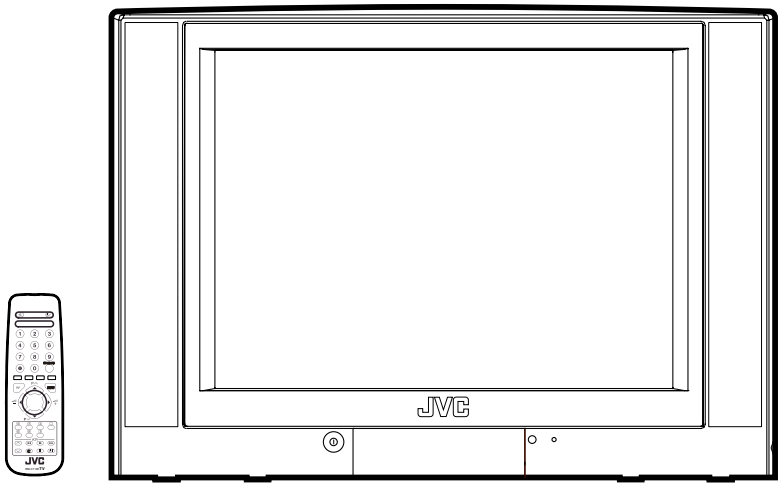
JVC

SERVICE MANUAL

COLOUR TELEVISION

AV-21KT1BEF/A, /B, AV-21KT1SEF/A, /B,
AV-21KT1BNF/A, /B, AV-21KT1SNF/A, /B,
AV-21KT1BPF/A, /B, AV-21KT1SPF/A, /B



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No.52134
2003/10

SPECIFICATION

Item		Content		
		AV-21KT1BEF AV-21KT1SEF	**AV-21KT1BNF AV-21KT1SNF**	**AV-21KT1BPF AV-21KT1SPF**
Dimensions (W × H × D)		61cm × 45cm × 48cm		
Mass		21kg		
TV RF System		B/G, D/K, K1	B/G	B/G, L/L'
Colour System	TV Mode	PAL / SECAM	PAL	PAL / SECAM
	Video Mode	PAL / SECAM / NTSC 3.58 / NTSC 4.43	PAL / NTSC 3.58 / NTSC 4.43	PAL / SECAM / NTSC 3.58 / NTSC 4.43
Sound System		NICAM / A2 (Germany system)		
Teletext System		FLOF (Fastext) / TOP (German system)		
Number of CH memory position		100ch		
Receiving Frequency	VHF Low	46.25MHz ~ 168.25MHz		
	VHF High	175.25MHz ~ 463.25MHz		
	UHF	471.25MHz ~ 863.25MHz		
	CATV	BG : S01-S41 & S75-S79 DK : S01-S41	BG : S01-S41 & S75-S79	BG : S01-S41 & S75-S79 L : S01-S41 & S75-S77
Intermediate Frequency	VIF SIF	38.9MHz (B/G, D/K, L) / 33.9MHz (L') 33.4MHz (5.5MHz:B/G) / 32.9MHz (6.0MHz:D/K) / 32.4MHz (6.5MHz:L) / 40.4MHz (6.5MHz:L')		
Colour Sub Carrier Frequency	PAL SECAM NTSC	4.43MHz 4.40625MHz / 4.25MHz 3.58MHz / 4.43MHz		
Power Input		AC220V ~ AC240V, 50Hz		
Power Consumption		85W(Max), 4W(Standby)		
Aerial Input Terminal		75Ω unbalanced, coaxial		
Picture Tube		Visible size : 51cm (Measured diagonally)		
High Voltage		25.3kV		
Speaker		5.7cm × 16cm oval type × 2		
Audio Output		6.5W + 6.5W		
Input	Video S-Video Audio (L/R)	1V(p-p) 75Ω Y : 1V(p-p) positive C : 0.286V(p-p) 500mV(rms) (-4dBs), High impedance (RCA pin jack × 2)		
Output	Video Audio (L/R)	1V(p-p) 75Ω 500mV(rms), Low impedance		
Input Terminal	Front Side Rear Side	F-AV (Video / Audio) AV-1 (Video / Audio / RGB) AV-2 (Video / Audio / RGB) : AV-2S (Video / Audio / RGB / S-VIDEO)		
Output Terminal	Right Side Rear Side	Headphone Jack (Stereo mini jack Ø3.5mm × 1) AV-1 (Video / Audio) AV-2 (Video / Audio)		
Remote Control Unit		VE-30017763 (RM-C1100), (AA/R06 dry battery × 2)		

Design & specifications are subject to change without notice.

SECTION 1
PRECAUTION

1.1 SAFETY PRECAUTIONS

(1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual**. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

(4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED (NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND.
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.

(5) If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See B1 POWER SUPPLY check).

(6) The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

(7) Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

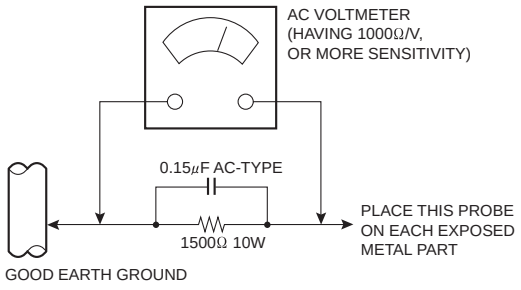
(8) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(9) **Isolation Check (Safety for Electrical Shock Hazard)**
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

a) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

b) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000Ω per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



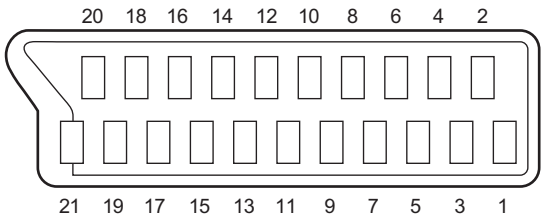
SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 21-pin Euro connector (SCART) : AV-1 / AV-2 (AV-2S)

Pin No.	Signal Designation	Matching Value	AV-1	AV-2 (AV-2S)
1	AUDIO R output	500mV(rms) (Nominal), Low impedance	Used	Used
2	AUDIO R input	500mV(rms) (Nominal), High impedance	Used (R1)	Used (R2)
3	AUDIO L output	500mV(rms) (Nominal), Low impedance	Used	Used
4	AUDIO GND	---	Used	Used
5	GND (B)	---	Used	Used
6	AUDIO L input	500mV(rms) (Nominal), High impedance	Used (L1)	Used (L2)
7	B input	700mV(B-W), 75 Ω	Used	Used
8	FUNCTION SW (SLOW SW)	Low : 0V-3V, High : 8V-12V, High impedance	Used	Used
9	GND (G)	---	Used	Used
10	SCL / T-V LINK	---	Not used	Used (SCL / TV-LINK)
11	G input	700mV(B-W), 75 Ω	Used	Used
12	SDA3	---	Not used	Not used
13	GND (R)	---	Used	Used
14	GND (YS)	---	Used	Used
15	R / C input	R : 700mV(B-W), 75 Ω C : $300mV_{(P-P)}$, 75 Ω	Used (R)	Used (C2/R)
16	Ys input (FAST SW)	Low : 0V-0.4V, 75 Ω High : 1V-3V, 75 Ω	Used	Used
17	GND (VIDEO output)	---	Used	Used
18	GND (VIDEO input)	---	Used	Used
19	VIDEO output	$1V_{(P-P)}$ (Negative sync), 75 Ω	Used	Used
20	VIDEO / Y input	$1V_{(P-P)}$ (Negative sync), 75 Ω	Used	Used
21	COMMON GND	---	Used	Used

(P-P= Peak to Peak, B-W= Blanking to white peak)

[Pin assignment]



2.2 FEATURES

- It is a remote controlled color television.
- 100 programs from VHF, UHF bands or cable channels can be preset.
- It can tune cable channels.
- Controlling the TV is very easy by its menu driven system.
- It has two Euroconnector sockets for external device (such as video recorder, video games, audio set, etc.)
- Front AV Input available.
- Stereo sound systems (German + Nicam) are available.
- Full function Teletext (Fastext, Toptext).
- It is possible to connect headphone.
- Direct channel access.
- APS (Automatic Programming System).
- All programs can be named.
- Forward or backward automatic tuning.
- Sleep timer.
- Child Lock.
- Automatic sound mute when no transmission.
- 5 minutes after the broadcasting (closedown), the TV switches itself automatically to stand-by mode.

2.3 MAIN DIFFERENCE LIST

⚠	Part Name	[/A models]	[/B models]
	Model name	AV-21KT1BEF/A AV-21KT1BNF/A AV-21KT1BPF/A AV-21KT1SEF/A AV-21KT1SNF/A AV-21KT1SPF/A	AV-21KT1BEF/B AV-21KT1BNF/B AV-21KT1BPF/B AV-21KT1SEF/B AV-21KT1SNF/B AV-21KT1SPF/B
⚠	PICTURE TUBE	VE-LG320X65	VE-THO13X191

⚠	Part Name	**AV-21KT1BEF AV-21KT1BNF AV-21KT1BPF**	**AV-21KT1SEF AV-21KT1SNF AV-21KT1SPF**
	COLOUR	BLACK	SILVER
⚠	FRONT CABINET	VE-20122422	VE-20122430
⚠	REAR COVER	VE-20112186	VE-20121199
⚠	FUNCTION BUTTON	VE-20112187	VE-20121204
⚠	POWER BUTTON	VE-20112223	VE-20121207
	JVC LOGO	VE-40013592	VE-40013593

⚠	Part Name	AV-21KT1BEF AV-21KT1SEF	AV-21KT1BNF AV-21KT1SNF	AV-21KT1BPF AV-21KT1SPF
⚠	MAIN PWB ASSY	VE-20124223 [/A] VE-20133635 [/B]	VE-20124225 [/A] VE-20129865 [/B]	VE-20121220 [/A] VE-20129808 [/B]
⚠	INSTRUCTION BOOK	VE-50036404	VE-50036402	VE-50036403
⚠	RATING LABEL	VE-20122445	VE-20122419	VE-20122423
	CARTON BOX	VE-50036605	VE-50036586	VE-50036588

SECTION 3
DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

3.1.1 REMOVING THE REAR COVER

(1) Unplug the power cord.
(2) Remove the 7 screws **[A]** as shown in the Fig. 1.
(3) Withdraw the REAR COVER toward you.

3.1.2 REMOVING THE MAIN PWB

- Remove the REAR COVER.
  (1) Slightly raise the both sides of the chassis by hand and withdraw the MAIN PWB backward.
  (If necessary, take off the wire clamp, connectors etc.)

3.1.3 REMOVING THE SPEAKER

- Remove the REAR COVER.
  (1) Remove the 4 screws **[B]**, and remove speaker as shown in Fig. 1.
  (2) Remove the speaker.
  (3) Remove the other side speaker by same procedure.

3.1.4 REMOVING THE FRONT AV PWB

- Remove the REAR COVER.
- Remove the MAIN PWB.
  (1) Remove the 2 screws marked **[C]** as shown in Fig. 1.
  (2) Remove the FRONT AV PWB.

3.1.5 REMOVING THE HEADPHONE PWB

- Remove the REAR COVER.
- Remove the MAIN PWB.
  (1) Remove the 1 screw **[D]** as shown in Fig. 1.
  (2) Remove the HEADPHONE PWB.

3.1.6 CHECKING THE PW BOARD

- To check the back side of the PW Board.
  (1) Pull out the PW Board. (Refer to REMOVING THE MAIN PWB).
  (2) Erect the PW Board vertically so that you can easily check the back side of the PW Board.

3.1.7 CAUTION

- When erecting the PW Board, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the wire connector is properly connected.
- When conducting a check with power supplied, be sure to confirm that the CRT EARTH WIRE (BRAIDED ASS'Y) is connected to the CRT SOCKET PW board.

3.1.8 WIRE CLAMPING AND CABLE TYING

(1) Be sure to clamp the wire.
(2) Never remove the cable tie used for tying the wires together.
Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

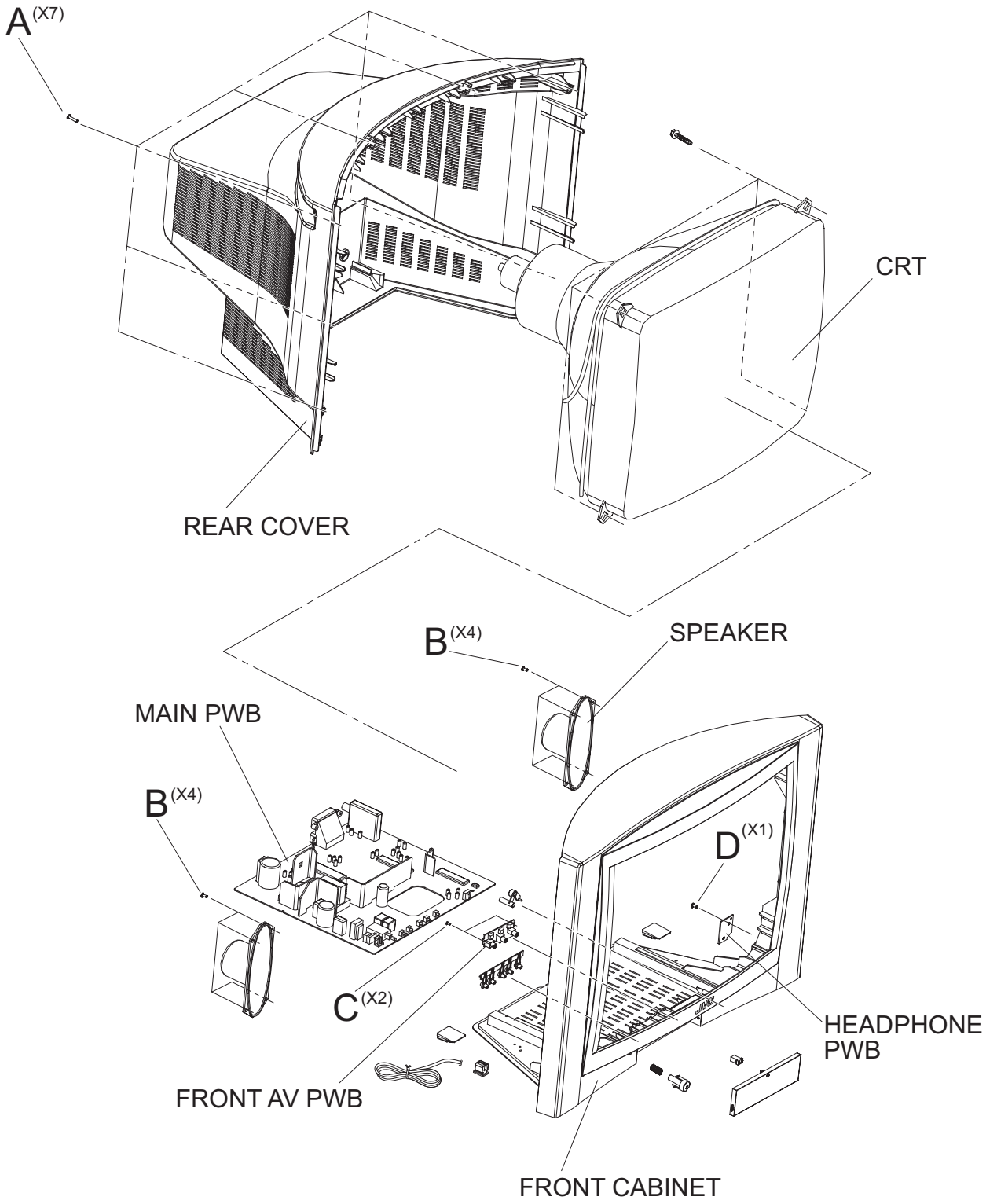

A (X7)
CRT
REAR COVER
B (X4)
SPEAKER
MAIN PWB
B (X4)
D (X1)
C (X2)
HEADPHONE PWB
FRONT AV PWB
FRONT CABINET

Fig.1

3.2 REPLACEMENT OF CHIP COMPONENT

3.2.1 CAUTIONS

(1) Avoid heating for more than 3 seconds.
(2) Do not rub the electrodes and the resist parts of the pattern.
(3) When removing a chip part, melt the solder adequately.
(4) Do not reuse a chip part after removing it.

3.2.2 SOLDERING IRON

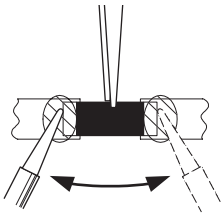
(1) Use a high insulation soldering iron with a thin pointed end of it.
(2) A 30w soldering iron is recommended for easily removing parts.

3.2.3 REPLACEMENT STEPS

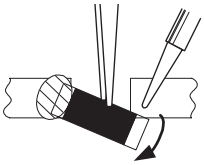
1. How to remove Chip parts

[Resistors, capacitors, etc.]

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



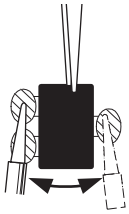
(2) Shift with the tweezers and remove the chip part.



[Transistors, diodes, variable resistors, etc.]

(1) Apply extra solder to each lead.

(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



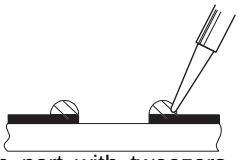
NOTE :

After removing the part, remove remaining solder from the pattern.

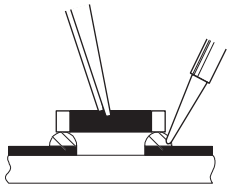
2. How to install Chip parts

[Resistors, capacitors, etc.]

(1) Apply solder to the pattern as indicated in the figure.

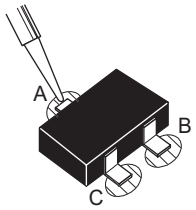


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

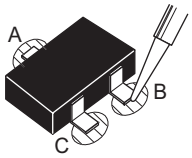


[Transistors, diodes, variable resistors, etc.]

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



3.3 REPLACEMENT OF MEMORY IC

3.3.1 MEMORY IC

This model use a memory IC. This memory IC stores data for proper operation of the video and deflection circuits. When replacing, be sure to use an IC containing this (initial value) data.

3.3.2 PROCEDURE FOR REPLACING MEMORY IC

1. Power off

Switch the power off and unplug the power cord from the outlet.

2. Replace IC.

Be sure to use memory IC written with the initial data values.

3. Power on

Plug the power cord into the outlet and switch the power on.

4. SERVICE MENU setting

(1) Press [MENU] key and, while the displayed MENU screen, press [4], [7], [2], [5] key on the remote control unit or press [MUTING] key and [INFORMATION] key at the simultaneously.

(2) The SERVICE MENU screen of Fig. 1 will be displayed.

(3) Verify what to set in the SERVICE MENU, and set whatever is necessary (Fig.1). Refer to the SERVICE ADJUSTMENT for setting.

(4) Press the [STANDARD] key to exit SERVICE MENU.

5. Receive channel setting

Refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the receive channels (Channels Preset) as described.

6. User settings

Check the user setting items according to after page.

Where these do not agree, refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the items as described.

SERVICE MENU

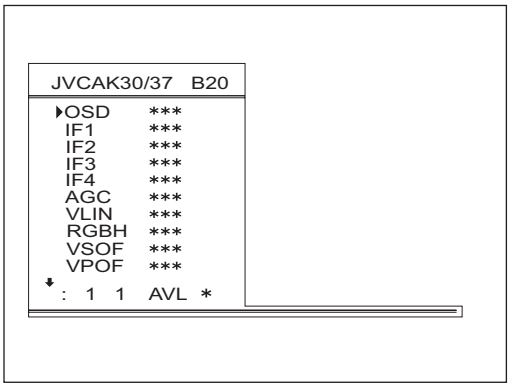


Fig.1

SERVICE MENU SELECT KEY

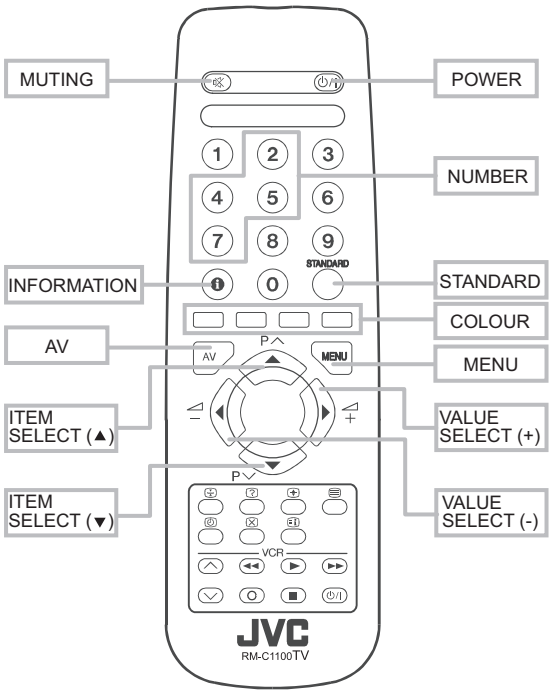


Fig.2

3.4 SETTING OF THE LAST MEMORY FOR SHIPMENT

3.4.1 USER SETTING VALUES

Setting Item	Setting Value	Setting Item	Setting Value
SOUND MENU		FEATURE MENU	
BALANCE	CENTER	SLEEP TIMER	OFF
BASS	CENTER	CHILD LOCK	OFF
TREBLE	CENTER	LANGUAGE	ENGLISH
MODE	STEREO	AV-2 OUTPUT	TV
EFFECT	OFF		
PICTURE MENU		INSTALL	
BRIGHTNESS	These adjust are automatically restored when APS bit in Service menu is set. The procedure for setting APS bit is described below.	PROGRAMME	Refer to the INSTRUCTION BOOK.
CONTRAST		BAND	
COLOUR		CHANNEL	
SHARPNESS		SEARCH	
HUE(only NTSC)		FINE TUNING	
MODE	AUTO	STORE	

3.4.2 SETTING APS BIT IN SERVICE MENU

(1) Enter service menu in TV mode by pressing "INFORMATION" and "MUTING"keys simultaneously. Service Menu will appear.
(2) Select TX1(TELETEXT OPTION) by pressing Up/Down keys on remote control unit.
(3) Press the 7 key on remote control unit to set APS bit. (After this, bit 7 of TX1 will be "1")
(4) Press STANDARD key on remote control unit to exit service mode.

NOTE :

DO NOT TURN OFF THE TV BY USING POWER BUTTON ON THE FRONT PANEL.

SECTION 4
ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

(1) You can make the necessary adjustments for this unit with either the Remote Control Unit or with the adjustment tools and parts as given below.
(2) Adjustment with the Remote Control Unit is made on the basis of the initial setting values, however, the new setting values which set the screen to its optimum condition may differ from the initial settings.
(3) Make sure that AC power is turned on correctly.
(4) Turn on the power for set and test equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
(5) Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
(6) Never touch any adjustment parts which are not specified in the list for this adjustment - variable resistors, transformers, condensers, etc.
(7) Presetting before adjustment.
Unless otherwise specified in the adjustment instructions, preset the following functions with the remote control unit:

BRIGHTNESS	CENTER
CONTRAST	
COLOUR	
SHARPNESS	

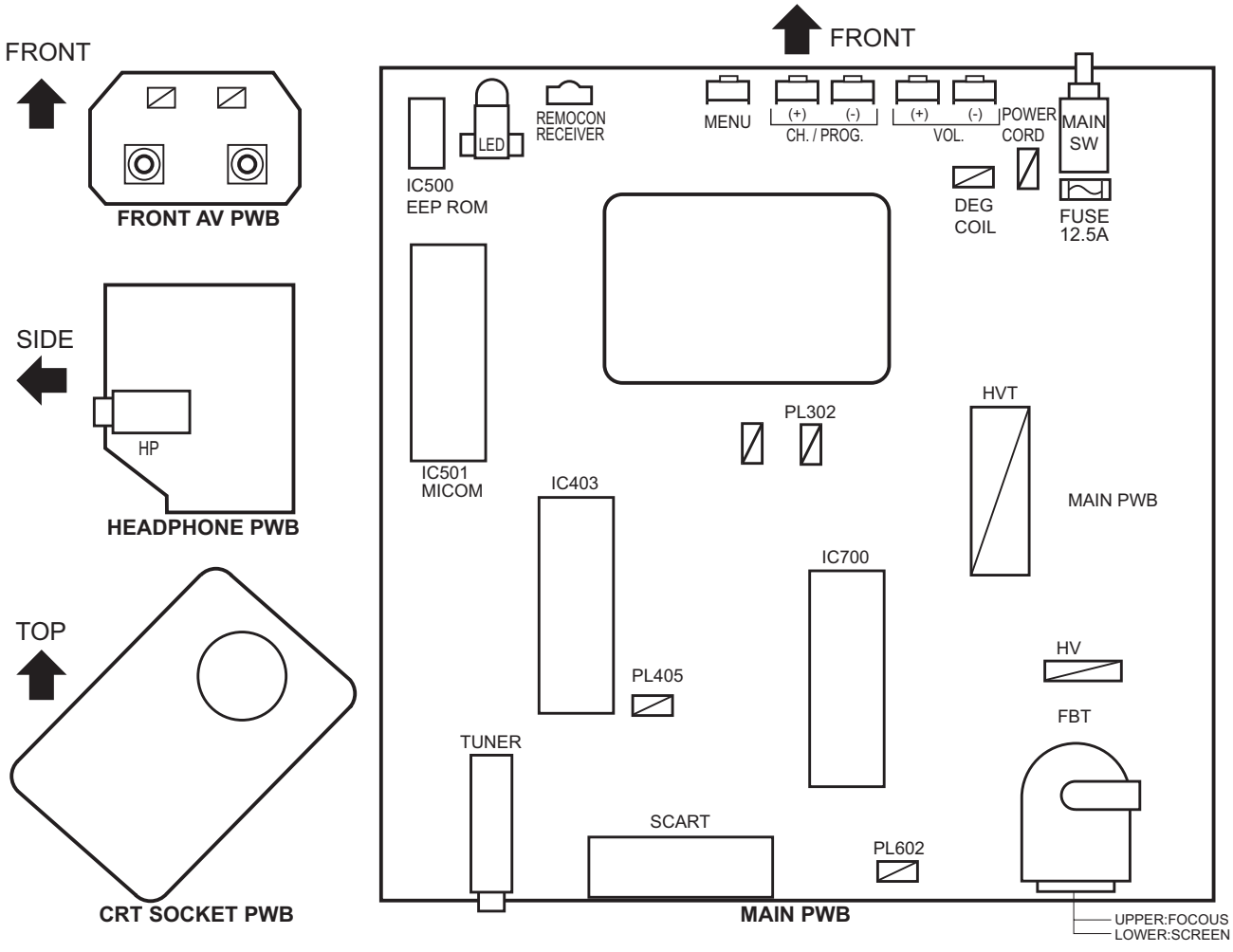
4.2 ADJUSTMENT EQUIPMENT

(1) DC voltmeter (or digital voltmeter)
(2) Signal generator (Pattern generator)
[PAL / SECAM / NTSC]
(3) Remote control unit

4.3 ADJUSTMENT ITEM

- FOCUS ADJUSTMENT
- SCREEN ADJUSTMENT
- OSD HORIZONTAL POSITION ADJUSTMENT
- IF ADJUSTMENT
- AGC AUTOMATICALLY ADJUSTMENT
- DEFLECTION CIRCUIT ADJUSTMENT
- GEOMETRY MENU ADJUSTMENT
- WHITE BALANCE ADJUSTMENT

4.4 ADJUSTMENT LOCATIONS



4.5 BASIC OPERATION OF SERVICE MENU

4.5.1 HOW TO ENTER SERVICE MENU

(1) Press the MENU key.
(2) MENU screen of (fig.1) will be displayed.

MENU SCREEN

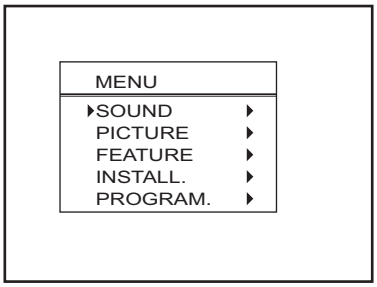


Fig.1

(3) While the MENU screen is displayed , press the [4], [7], [2], [5] key or [INFORMATION] key and [MUTING] key simultaneously.
(4) The SERVICE MENU screen of (Fig.2) will be displayed.

SERVICE MENU

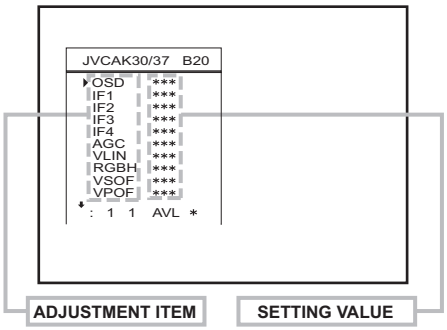


Fig.2

4.5.2 SELECTION OF ADJUSTMENT ITEMS

(1) Enter the SERVICE MENU
(2) Press the [▲/▼] key and select the ADJUSTMENT ITEM.
(3) Press the [◀ / ▶] key and set the SETTING VALUE.

4.5.3 HOW TO EXIT SERVICE MODE

(1) Press the [STANDARD] Key on REMOTE CONTROL UNIT.

4.5.4 HOW TO ENTER THE GEOMETRY MENU

- This model is built-in GEOMETRY MENU for geometry adjustment.
  (1) Enter the SERVICE MENU
  (2) Press the [GREEN] key, geometry menu appears (Fig.3).
  (3) Press the [▲/▼] key and select the ADJUSTMENT ITEM.
  (4) Press the [◀ / ▶] key and set the SETTING VALUE.

GEOMETRY MENU

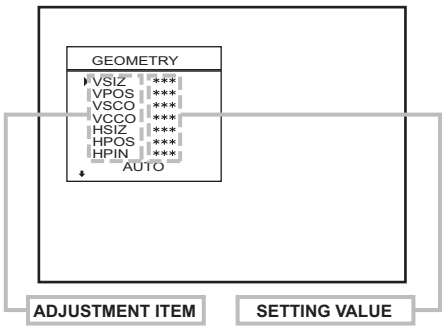
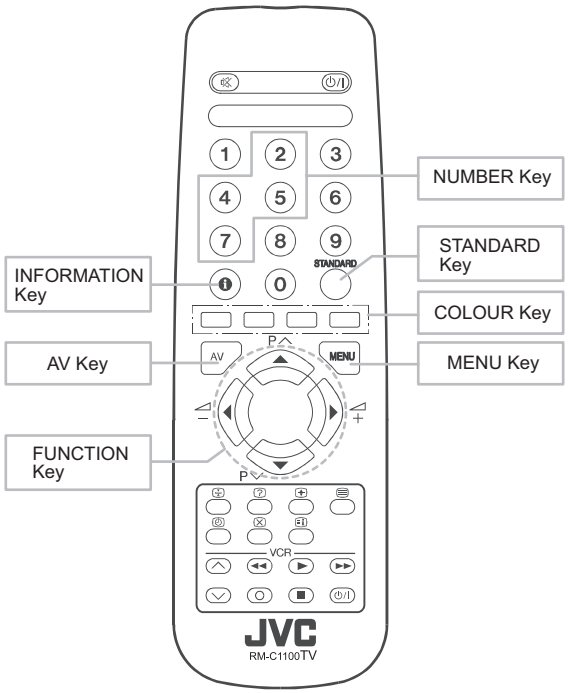


Fig.3

REMOTE CONTROL UNIT key NAME



FUNCTION OF COLOUR key

RED key :
It switches the AVL to ON or OFF mode on service menu.
AVL word is visible on service menu when AVL is on.

GREEN key :
It switches to GEOMETRY adjust menu. Geometry of the picture is adjusted in this menu.

YELLOW key :
It switches to VERTICAL SCAN DISABLE mode.
It is useful to adjust screen voltage.

BLUE key :
It is used to adjust AGC and IF automatically on service menu.

4.5.5 ADJUSTMENT ITEM

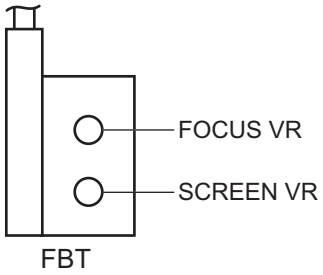
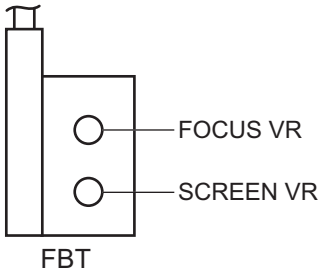
ADJUSTMENT ITEM	DESCRIPTION
OSD	HORIZONTAL POSITION OF OSD
IF1	IF COARSE ADJUSTMENT
IF2	IF FINE ADJUSTMENT
IF3	IF COARSE ADJUSTMENT FOR L-PRIME
IF4	IF FINE ADJUSTMENT FOR L-PRIME
AGC	AUTOMATIC GAIN CONTROL
VLIN	VERTICAL LINEARITY
RGBH	RGB MODE HORIZONTAL SHIFT OFFSET
VSOF	VERTICAL SIZE OFFSET for 60Hz
VPOF	VERTICAL POSITION OFFSET for 60Hz
HSOF	HORIZONTAL SIZE OFFSET for 60Hz
HPOF	HORIZONTAL POSITION OFFSET for 60Hz
HTOF	HORIZONTAL TRAPEZOID OFFSET for 60Hz
WR	WHITE POINT ADJUSTMENT FOR RED
WG	WHITE POINT ADJUSTMENT FOR GREEN
WB	WHITE POINT ADJUSTMENT FOR BLUE
BR	BIAS FOR RED
BG	BIAS FOR GREEN
APR	AUTOMATIC RGB PEAK REGULATION THRESHOLD
BRI	BRIGHTNESS
CON	CONTRAST
COL	COLOUR
SHA	SHARP
HUE	HUE
VOL	VOLUME
WR-R	WHITE POINT ADJUSTMENT for RED (RGBmode)
WG-R	WHITE POINT ADJUSTMENT for GREEN (RGBmode)
WB-R	WHITE POINT ADJUSTMENT for BLUE (RGBmode)
FMP1	FM PRESCALER WHEN AVL IS OFF
NIP1	NICAM PRESCALER WHEN AVL IS OFF
SCP1	SCART PRESCALER WHEN AVL IS OFF
SEC1	SECAM PRESCALER WHEN AVL IS OFF
FMP2	FM PRESCALER WHEN AVL IS ON
NIP2	NICAM PRESCALER WHEN AVL IS ON
SCP2	SCART PRESCALER WHEN AVL IS ON
SEC2	SECAM PRESCALER WHEN AVL IS ON
F1H	HIGH BYTE OF VHF1-VHF3 CROSS-OVER FREQUENCY
F1L	LOW BYTE OF VHF1-VHF3 CROSS-OVER FREQUENCY
F2H	HIGH BYTE OF VHF3-UHF CROSS-OVER FREQUENCY
F2L	LOW BYTE OF VHF3-UHF CROSS-OVER FREQUENCY
BS1	BAND SWITCHING BYTE FOR VHF1
BS2	BAND SWITCHING BYTE FOR VHF3
BS3	BAND SWITCHING BYTE FOR UHF
CB	CONTROL BYTE
OP1	PERIPHERAL OPTIONS
OP2	RECEPTION STANDARD OPTIONS
OP3	VIDEO OPTIONS
OP4	TV FEATURES
OP5	CHANNEL TABLES
TX1	TELETEXT OPTIONS
GEOM	GEOMETRY OPTIONS
OP8	PIP PRESET CHANGE

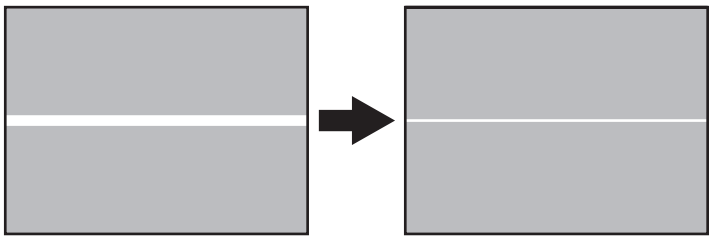
4.5.6 GEOMETRY MENU

ADJUSTMENT ITEM	DESCRIPTION
VSIZ	VERTICAL SIZE for 50Hz
VPOS	VERTICAL POSITION for 50Hz
VSCO	VERTICAL S-CORRECTION for 50Hz
VCCO	VERTICAL CORNER CORRECTION for 50Hz
HSIZ	HORIZONTAL SIZE for 50Hz
HPOS	HORIZONTAL POSITION for 50Hz
HPIN	HORIZONTAL PINCUSHION for 50Hz
HCCO	HORIZONTAL CORNER CORRECTION for 50H
HTRP	HORIZONTAL TRAPEZOID for 50Hz
VZSZ	VERTICAL ZOOM SIZE for 50Hz

4.6 ADJUSTMENT PROCEDURE

4.6.1 FOCUS / SCREEN ADJUSTMENT

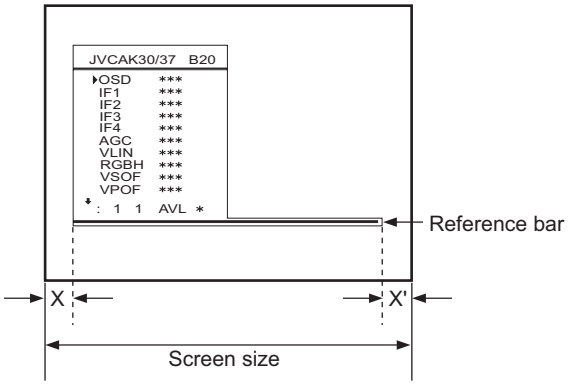
Item	Measuring instrument	Test point	Adjustment part	Description
FOCUS adjustment	Signal generator Remote control unit		FOCUS VR [On the FBT]	(1) Receive a PAL cross-hatch signal. (2) Adjust FOCUS VR on the FBT as thin as possible. 
SCREEN adjustment	Remote control unit		SCREEN VR [On the FBT]	(1) Enter the SERVICE MENU. (2) Press the [YELLOW] key to disable vertical scan. (3) Adjust SCREEN VR. on the FBT as thin as possible. (4) Press [YELLOW] key again to enable vertical scan. (5) Press [STANDARD] key to leave service menu. 



4.6.2 OSD ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
HORIZONTAL POSITION OF OSD adjustment	Remote control unit		OSD	(1) Enter the SERVICE MENU. (2) Select OSD with the [▲/▼] key. (3) Adjust the OSD horizontal position with the [◀/▶] key, which shifts the reference bar on the bottom of the SERVICE MENU horizontally, so that the OSD is positioned on the screen center. (X=X')

SERVICE MENU SCREEN

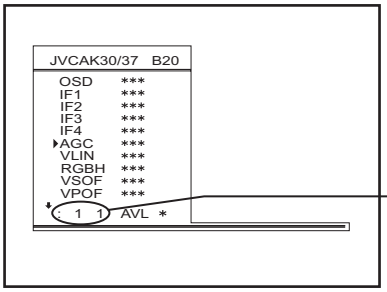


4.6.3 IF ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
IF adjustment	Remote control unit		IF 1 IF 2 IF 3 IF 4	(1) Receive a PAL colour bar pattern. (2) Enter the SERVICE MENU. (3) Select IF 1 with the [▲/▼] key (4) Press [BLUE] key during IF 1 is highlighted, IF 1 and IF 2 values are adjusted automatically by software. (5) If the standard is L-prime, IF 3 and IF 4 values are adjustment automatically when [BLUE] key is pressed during IF 1 is highlighted.

4.6.4 AGC AUTOMATICALLY ADJUSTMENT

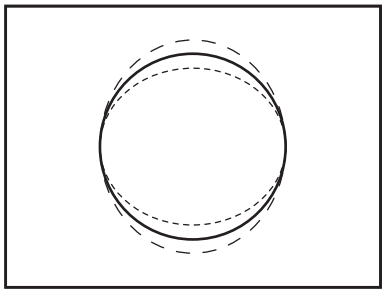
Item	Measuring instrument	Test point	Adjustment part	Description
AGC AUTOMATICALLY adjustment	Remote control unit		AGC	(1) Enter the SERVICE MENU. (2) Receive a 60dBmV RF signal level. (3) Select AGC with the [▲/▼] key. (4) Press [BLUE] key on the remote control unit. (5) Then the adjustment will be done automatically by software. (6) See the AGC indicator on SERVICE MENU, it must be "1". (7) Check that picture is normal at 90dBmV signal level.

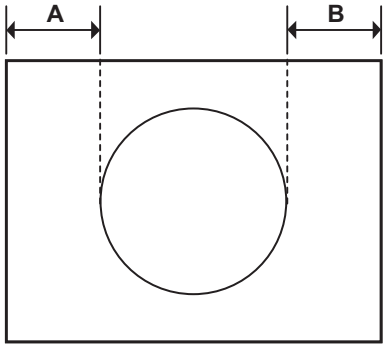
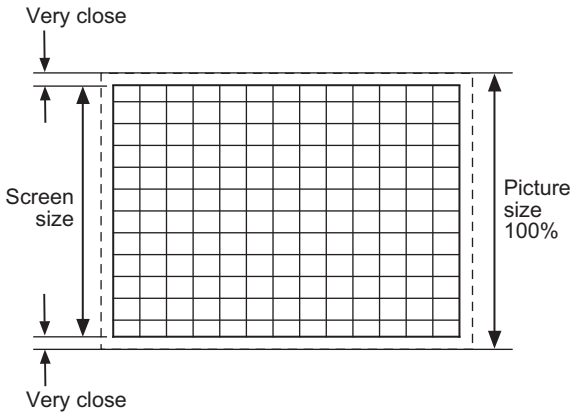
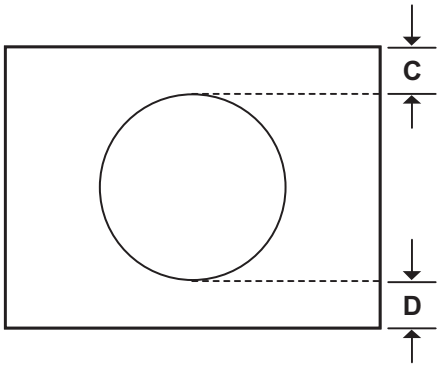


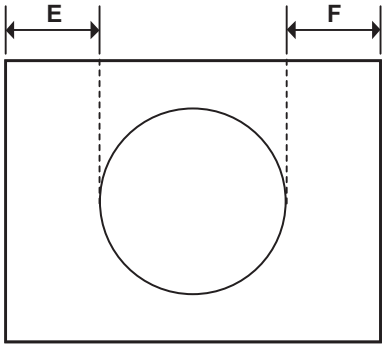
IF INDICATOR	AGC INDICATOR	NONE
:	1	1

4.6.5 DEFLECTION CIRCUIT ADJUSTMENT

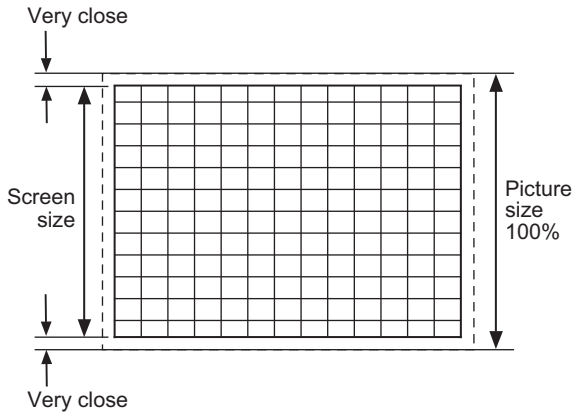
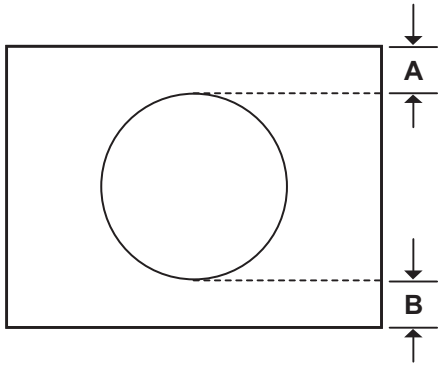
Item	Measuring instrument	Test point	Adjustment part	Description
VERTICAL LINEARITY adjustment	Signal generator Remote control unit		VLIN	(1) Receive a PAL B/G circle pattern. (2) Enter the SERVICE MENU. (3) Select VLIN with the [▲/▼] key. (4) Adjust VLIN with the [◀/▶] key until circle as round as possible.

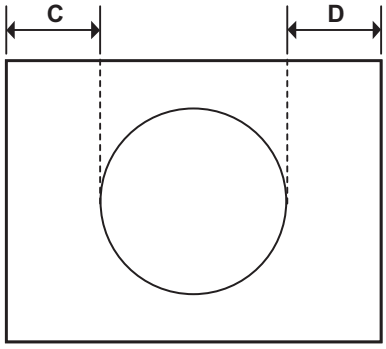


Item	Measuring instrument	Test point	Adjustment part	Description
RGB MODE HORIZONTAL SHIFT adjustment	Signal generator Remote control unit		RGBH	(1) Input R/G/B circle pattern signal via video input terminal. (2) Press [AV] key on the remote control unit, force the TV to RGB mode. (3) Enter the SERVICE MENU. (4) Select RGBH with the [▲/▼] key. (5) Adjust RGBH with the [◀/▶] key until the circle pattern is horizontally centered.(A=B) (6) Check and readjust RGBH item if the adjustment becomes improper after some other geometric adjustments are done.
				
VERTICAL SIZE OFFSET adjustment (60Hz)	Signal generator Remote control unit		VSOF	(1) Receive a NTSC-M cross-hatch pattern of vertical frequency 60Hz. (2) Enter SERVICE MENU. (3) Select VSOF with the [▲/▼] key. (4) Adjust VSOF with the [◀/▶] key until the horizontal black lines on both the upper and lower part of the pattern become very close to the opper anr lower horizontal sides of picture size and nearly about to disappear. (5) Check and readjust VSOF item if the adjustment bocomes improper after some other geometric adjustments are done.
				
VERTICAL POSITION OFFSET adjustment (60Hz)	Signal generator Remote control unit		VPOF	(1) Receive a NTSC-M circle pattern of vertical frequency 60Hz. (2) Enter the SERVICE MENU. (3) Select VPOF with the [▲/▼] key. (4) Adjust VPOF with the [◀/▶] key until the picture is vertically centered.(C=D) (5) Check and readjust vertical position item if the adjustment becomes improper after some other geometric adjustments are done.
				

Item	Measuring instrument	Test point	Adjustment part	Description
HORIZONTAL POSITION OFFSET adjustment (60Hz)	Signal generator Remote control unit		HPOF	(1) Receive a NTSC-M circle pattern signal of vertical frequency 60Hz. (2) Enter the SERVICE MENU. (3) Select HPOF with the [▲/▼] key. (4) Adjust HPOF with the [◀/▶] key until the circle pattern is horizontally centered.(E=F) (5) Check and readjust a horizontal position item if the adjustment becomes improper after some other geometric adjustments are done. Press the [MENU] key and memorize the set value.
				

4.6.6 GEOMETRY MENU ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
VERTICAL SIZE adjustment (50Hz)	Signal generator Remote control unit		VSIZ	(1) Receive a PAL B/G cross-hatch pattern of vertical frequency 50Hz. (2) Enter the SERVICE MENU. (3) Press the [GREEN] key then enter the GEOMETRY MENU. (4) Select VSIZ (Vertical size) with the [▲/▼] key. (5) Adjust VSIZ with the [◀/▶] key until the horizontal black lines on both the upper and lower horizontal sides of picture size and nearly about to disappear. (6) Check and readjust VSIZ item if the adjustment becomes improper after some other geometric adjustments are done.
				
VERTICAL POSITION adjustment (50Hz)	Signal generator Remote control unit		VPOS	(1) Receive a PAL B/G circle pattern signal of vertical frequency 50Hz. (2) Enter the GEOMETRY MENU. (3) Select VPOS (Vertical position) with the [▲/▼] key. (4) Adjust VPOS with the [◀/▶] key until the circle pattern is vertically centered.(A=B) (5) Check and readjust VPOS item if the adjustment becomes improper after some other geometric adjustments are done.
				

Item	Measuring instrument	Test point	Adjustment part	Description
HORIZONTAL POSITION OFFSET adjustment (50Hz)	Signal generator Remote control unit		HPOS	(1) Receive a PAL B/G circle pattern signal of vertical frequency 50Hz. (2) Enter the GEOMETRY MENU. (3) Select HPOS (Horizontal position) with the [▲/▼] key. (4) Adjust HPOS with the [◀/▶] key until the circle pattern is horizontally centered.(C=D) (5) Check and readjust HPOS item if the adjustment becomes improper after some other geometric adjustments are done.
				

4.6.7 WHITE BALANCE ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE adjustment (Low light)	Signal generator Remote control unit		WR WG WB	(1) Receive a black & white signal (colour off). (2) Enter the SERVICE MENU. (3) Select WR / WG / WB with the [▲/▼] key respectively. (4) Adjust WR / WG / WB with the [◀/▶] key, respectively, until the white part turns to pure white without any other colour.
WHITE BALANCE adjustment (High light)	Signal generator Remote control unit		BR BG	(1) Receive a black & white signal (colour off). (2) Enter the SERVICE MENU. (3) Select BR / BG with the [▲/▼] key respectively. (4) Adjust BR / BG with the [◀/▶] key, respectively until the white part of screen make white colour.

SECTION 5
TROUBLESHOOTING

This service manual does not describe TROUBLESHOOTING.

JVC

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